

# **South Coast Water District**

## **Urban Water Management Plan Update 2005**

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## 1.0 INTRODUCTION

### 1.1 Urban Water Management Planning Act

This report has been prepared in response to Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act), which were added by Statute 1983, Chapter 1009, and became effective on January 1, 1984. This Act, which was adopted by the legislature through Assembly Bill (AB) Number 797, requires that "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare and adopt, in accordance with prescribed requirements, an urban water management plan." The Act requires urban water suppliers to prepare plans that describe and evaluate reasonable and practical efficient water uses, recycling, and conservation activities. These plans must be filed with the California Department of Water Resources (DWR) every five years. The current Urban Water Management Plan is due to DWR by December 31, 2005.

Since its passage in 1983, several amendments have been added to the Act, the most recent coming in 2004. Some of the amendments provided for additional emphasis on metering, drought contingency planning, and water recycling. Also new since 2000 is AB 901, which provides new requirements for addressing water quality. Specifically, Urban Water Management Plans must now include information relating to:

- The quality of existing sources over the 20-year planning horizon; and
- The manner in which water quality affects water management strategies and supply.

#### 1.1.1 Senate Bills 610 and 221 of 2001

In 2001 the state legislature passed two bills that amended state law to require that counties and cities should consider information relating to the availability of water to supply certain new large proposed developments. This information is required to be included in the administrative record of the approval process for such development projects. SB610 requires the information to be provided to local governments for inclusion into environmental documents for projects that are subject to the California Environmental Quality Act. SB 221 requires that city or county approval of certain residential subdivisions must include written verification that sufficient water supply is available to serve that subdivision. Both of these statutes identify the adopted local Urban Water Management Plan (UWMP) as an important source document to be used to fulfill these requirements. The UWMP is also identified as an important source to be considered when local agencies are updating their General Plans.

Under this legislation, the cities and counties that are considering a proposed development application must ask the local water agencies to present the required water supply information. The water agency must provide the information within 90 days of the request. The information required is outlined below.

#### 1.1.2 Requirements of SB610

This legislation requires that cities and counties address in environmental documentation for an applicable development project the sufficiency of the projected water supply. Specifically, SB

610 requires that applicable projects subject to CEQA and supplied with water from a public water system receive a "water supply assessment" from the water service provider on the adequacy of available supplies over a 20-year projection. SB 610 also makes changes to the Urban Water Management Planning Act to:

- Require additional information if groundwater is identified as a source, including a copy of any groundwater management plan, a copy of the adjudication order or decree for adjudicated basins, and if non-adjudicated, whether the basin has been identified as over drafted; and
- Require a description of specific water supply projects and implementation schedules to meet projected demands over the 20-year planning horizon.
- The new requirements for water supply assessments (under Water Code §§ 10910-10915) allow compliance by incorporating by reference information from the most recent Urban Water Management Plan, provided the project's water demand was included in that plan.

The water supply assessment must consider supplies under three hydrologic conditions: normal, single-dry and multiple dry years. The information considered must include water received in prior years from existing water supply entitlements or service contracts. In addition to the reporting of these data, supporting documentation should be provided, including written contracts, a water agency program to finance the planned deliveries, any permits required for delivery infrastructure and regulatory approval for diversion or conveyance of water. Where the water agency identifies a new source of water, other agencies that also have rights to the same source of water should be identified. Where the sources of water include groundwater, additional information about the groundwater source must be included, as follows:

- A description of the groundwater basin, including:
  - For adjudicated basins a copy of the order or decree and a description of the amount of water that can be legally withdrawn from the basin.
  - For non-adjudicated basins, information must be provided as to whether the basin is over drafted or projected to be over drafted in the most current DWR bulletin and a detailed description of the responsible party's efforts to eliminate the long-term overdraft condition.
- A detailed description and analysis of the amount and location of groundwater pumped by water supplier for the past five years from any groundwater basin from which the proposed project will be supplied.
- A detailed description and analysis of the amount and location of groundwater that is projected to be withdrawn from the basin.
- An analysis of the sufficiency of the groundwater to meet the projected water demand associated with the proposed project.

Where current water sources are not sufficient, the water agency must provide its plans for acquiring additional water supplies. Suggested components that could be included in the plans

are cost estimates, a description of permits required, and estimated time frames to supply acquisition.

### **1.1.3 Requirements of SB 221**

This legislation prohibits approval of subdivisions consisting of more than 500 dwelling units unless there is verification of sufficient water supplies for the project over a 20-year projection. This requirement also applies to increases of 10 percent or more of service connections for public water systems with less than 500 service connections. The written verification must include the following information:

- Historical record for at least 20 years;
- Urban Water Shortage Contingency Analysis;
- Supply reduction for “specific water use sector” during times of shortage; and
- Amount of water that can be reasonably relied upon from specified supply projects.

These requirements for written verifications (under Gov. Code § 66473.7) do not directly affect the requirements under the Urban Water Management Plan Act. However, the written verification must be based on substantial evidence, and SB 221 expressly provides that substantial evidence may include the most recent Urban Water Management Plan. Therefore, a water supplier may include the requirements under SB 221 in its Urban Water Management Plan as a means of satisfying the substantial evidence requirement.

### **1.1.4 Summary of Changes in the Act Since 2000**

As a result of the above legislation and some additional legislative changes, the following are changes in the Urban Water Management Planning Act that have occurred from 2000 to the present:

- New legislative findings concerning water quality (Water Code § 10610.2, subds. (a)(4) – (a)(9), (b));
- A new requirement to describe water management tools that maximize local resources and minimize imported water supplies (§ 10620, subd. (f));
- A new requirement to notify all cities and counties within the service area that a plan or plan amendment is being prepared (§ 10620, subd. (b));
- A new requirement for additional information on groundwater where groundwater is identified as an existing or planned water source (§ 10631, subd. (b));
- Revised listing of water demand management measures to be described (CUWCC members may still elect to submit their conservation annual reports to meet this requirement) (§ 10631, subd. (f)(1));
- A new requirement to describe specific water supply projects and implementation schedules to meet projected demands over the 20-year planning horizon (§ 10631, subd. (h));
- A new requirement for data sharing between contracting water suppliers (i.e., wholesale, intermediate, and retail agencies) and a provision allowing suppliers to rely on information provided by a wholesale agency (§ 10631, subd. (j));

- A new provision allowing DWR to consider a water supplier's achievements and implementation plans for water conservation when evaluating applications for grants and loans (§ 10631.5);
- A new requirement to describe quantities of recycled water (§ 10633, subds. (b), (g));
- A new requirement to describe water quality over the 20-year planning horizon (§ 10634);
- A new requirement to notify all cities and counties within the service area of the time and place of the public hearing on plan adoption (§ 10642);
- A new requirement to file the plan or plan amendment with all cities and counties within the service area (§ 10644, subd. (a));
- For a water supplier that does not comply with the Urban Water Management Planning Act, a new requirement that DWR make that supplier ineligible to receive Prop 204 or Prop 13 funding (§ 10656); and
- A new provision allowing DWR to consider a water supplier's compliance with the plan requirements in determining the eligibility of receiving any funds from DWR-administered programs (§ 10657).

## 1.2 Coordination with Other Agencies

Recognizing that close coordination among other relevant public agencies is the key to the success of its Urban Water Management Plan (UWMP), South Coast Water District (SCWD) worked closely with other entities to develop and update this planning document. Table 1 documents the name of the agencies with which SCWD coordinated information for developing its UWMP.

Table 1 Coordination with Appropriate Agencies						
Agency	MWDIOC	SOCWA	City of Dana Point	City of Laguna Beach	County of Orange	City of San Clemente
Reviewed and approved the plan	X	X	X	X	X	X
Commented on the draft		X	X	X	X	
Attended public meetings			X			
Was provided office assistance	X	X	X	X	X	X
Was sent a copy of the draft plan	X	X	X	X	X	X
Was sent a notice of intent to adopt	X	X	X	X	X	X

General Plans are source documents for water suppliers as they assess their own water resource needs. And when completed, an UWMP also serves as a source document for cities and counties as they prepare their General Plans. General Plans and UWMPs may be linked, as their accuracy and usefulness are interdependent.

To meet the requirement set forth by Water Code section 10631 (k), SCWD notified Municipal Water District of Orange County (MWDIOC) of the amount of water SCWD wishes to purchase over the next 25 years. SCWD also contacted South Orange County Wastewater Agency (SOCWA) for wastewater and recycled water related issues.

### **1.2.1 Public Community Involvement**

According to California Water Code Section 10642, "each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan."

To generate interest and encourage the public's participation in the planning process and to actively seek input SCWD discussed the UWMP Update 2005 on November 7, 2005 at an Engineering and Operations Committee of the Board( a Public meeting) and a Board Public Hearing held on the draft plan on November 22, 2005. The UWMP draft was also available for review and public comment at the District office, on the Districts website and at the Dana Point Public Library.

### **1.2.2 Department of Water Resources Role and Guidance**

California Department of Water Resources (DWR) staff reviews and determines the completeness of individual Urban Water Management Plans pursuant to the Urban Water Management Planning Act. Agencies subject to the Act must have adopted a complete UWMP that meets the requirements of the law and submit it to DWR to be eligible for drought assistance or to receive funds through the Department. Results of the DWR review are provided to urban water suppliers through written correspondence. If necessary, water agencies with plans that do not meet DWR standards may wish to use the comments within the review letter to revise their UWMP for re-submittal. DWR provides a Legislative Report to the California Legislature one year after UWMPs are due, detailing the status and any outstanding elements of the UWMPs. DWR also prepares reports and provides data for any legislative hearings held to consider the effectiveness and/or completeness of the UWMPs in question.

DWR provides technical assistance to urban water suppliers to help them meet the requirements of the Act. DWR has provided guidance materials to aid water suppliers in developing year 2005 UWMPs. These materials are intended both to help water districts comply with the law and to help DWR staff review submitted plans for regulatory compliance. Guidance materials consist of a series of worksheets and check lists detailing acceptable responses to the requirements set forth in the Urban Water Management Planning Act. SCWD has used the guidance material in the development of this Plan.

### **1.2.3 Organization of the SCWD UWMP**

This document is divided into nine (9) sections.

1. Section 1-The introduction, which explains the purpose of the Plan and the development of the plan.
2. Section 2 - SCWD as an agency and its service area. This section addresses current and projected water supplies available to the District and reliability of its water supplies
3. Section 3 - Determination of DMM implementation
4. Section 4 - Discusses the water shortage contingency plan.
5. Section 5 - Recycled Water Plan: Describes the wastewater management and water recycling in the SCWD service area.

6. Section 6 - Describes the water quality issues that exist in the SCWD service area and addresses their impact on the reliability of providing water service.
7. Section 7 - Water Service Reliability- Discusses reliability of water service to SCWD costumers and compares demand to supplies for normal, single-dry, and multiple-dry year scenarios.
8. Section 8 - Illustrates the adoption and implementation of the Plan.
9. Section 9 – Appendix

### **1.3 Resource Maximization/Import Minimization Plan**

SCWD is committed to identifying ways of maximizing the area's existing water resources.

#### **1.3.1 Integrated Regional Water Management Plan**

In an effort to minimize its dependency on imported supplies SCWD has taken a proactive stance and participated in the Integrated Regional Water Management Planning along with MWDOC and other Orange County water agencies.

Recognizing the sustainable future of the MWDOC service area depends upon the successful management of local and imported water supplies, MWDOC has been working with the County of Orange (lead) and the 24 cities and special districts serving the water and wastewater needs of Orange County over the years to develop and integrate regional strategies that address, raise community awareness and coordinate numerous and varied projects that:

- Protect communities from drought
- Enhance local water supply and system reliability
- Ensure continued water security
- Optimize watershed and coastal resources
- Improve water quality throughout the watersheds
- Safeguard habitat.

In addition, these projects, which are based on a watershed approach, include one or more of the following water management elements:

- Programs for water supply reliability, water conservation and water use efficiency
- Storm water capture, storage, treatment and management
- Removal of invasive non-native plants
- Creation and enhancement of wetlands, and the acquisition, protection, and restoration of open space and watershed lands
- Non-point source pollution reduction, management, and monitoring
- Groundwater recharge and management projects
- Water banking, water exchange, water reclamation, desalting, and other treatment technologies

- Planning and implementation of multipurpose flood control programs that protect property; improve water quality, storm water capture and percolation; and protect or improve wildlife habitat
- Watershed management planning and implementation
- Demonstration projects to develop new drinking water treatment and distribution methods.

In August 2004, this diverse group came together as a single unit to create stronger regional partnerships and connectivity, to maximize the efficiency of their efforts, and to identify funding opportunities and apply for competitive grants.

Specifically, the South Orange County Integrated Regional Water Management (IRWM) Group provides a framework for coordinating planning activities and projects related to water management and watershed protection that have been studied and funded, or are in need of funding, and integrating them into a water management plan with multiple regional benefits.

To date nearly 100 short- and long-term projects have been identified and prioritized based on the overall benefit they provide the south county region and their readiness for implementation.

### **1.3.2 Water Use Efficiency Program**

California's water is a valuable and limited natural resource. There is a continuing need to conserve and efficiently utilize existing water supplies. Interest in water use efficiency (conservation) has been heightened by the continued growing need for water throughout California. The growth in water demand will continue due to the projected increase in population, along with increases in commercial and industrial activity. Water use efficiency and demand management programs will help to stretch existing water supplies to meet these growing needs.

SCWD recognizes water use efficiency as an integral component of the current and future water resource strategy. Along with recycled water, and imported water, water use efficiency is recognized as a low-cost source of new supply for the District.

SCWD demonstrated its commitment to water use efficiency by voluntarily signing the *Memorandum of Understanding Regarding Urban Water Conservation in California (MOU)*. The California Urban Water Conservation Council (CUWCC) was formed through adoption of this MOU and is considered the "keeper" of the fourteen Best Management Practices (BMPs), with the authority to add, change, or remove BMPs. The CUWCC also monitors BMP implementation of the MOU. As a signatory to the MOU, SCWD has committed to a good-faith-effort to implement all cost-effective BMPs.

Relative to urban water supply and management in general, the term "Best Management Practices" refers to policies, programs, rules, regulations and ordinances, and the use of devices, equipment and facilities that, over the long term, have been generally justified and accepted by the industry as providing a "reliable" reduction in water demand. These methodologies and technologies are both technically and economically reasonable, are not environmentally or socially unacceptable, and their practice is not otherwise unreasonable for most water suppliers to carry out.

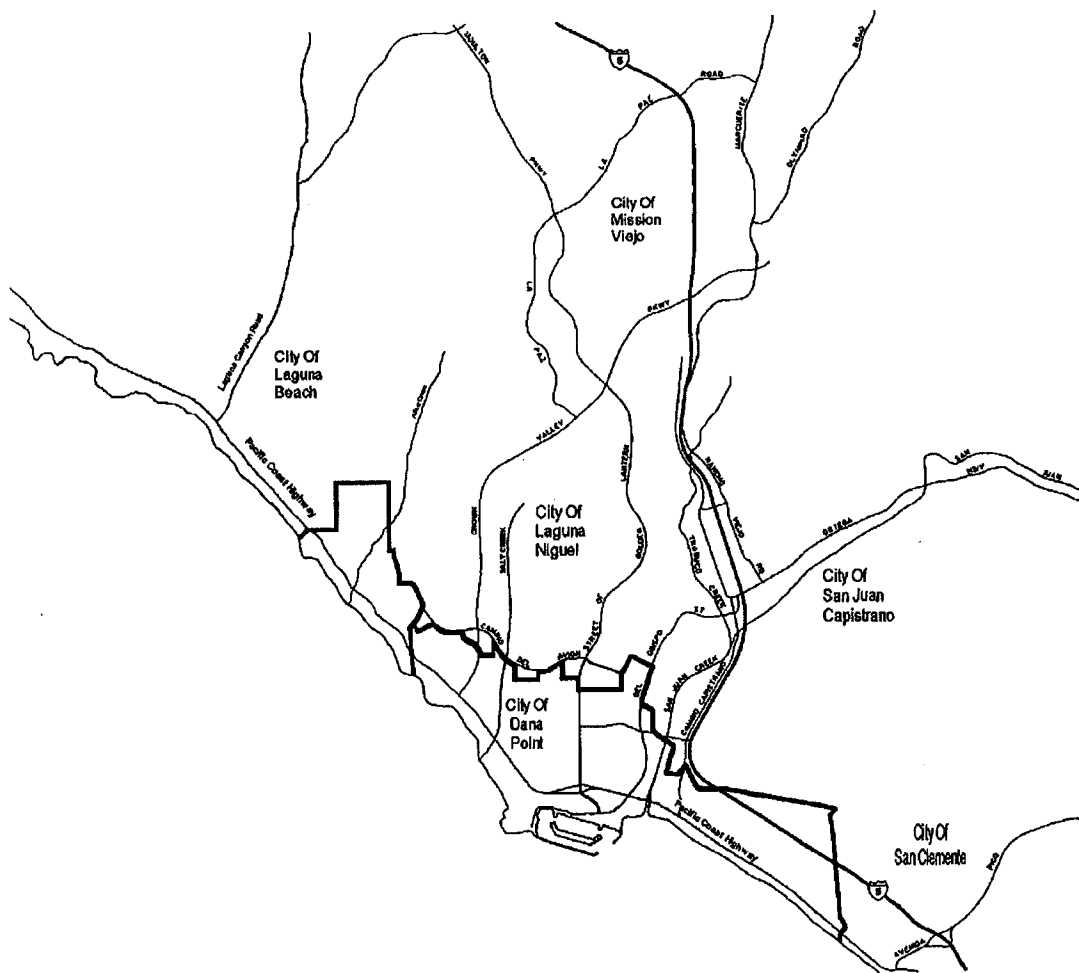
These 14 BMPs include technologies and methodologies that have been sufficiently documented in multiple demonstration projects that result in more efficient water use and conservation.

SCWD has instituted various water conservation plans over the past decade in an effort to decrease present and future water demands. The District has regularly filed BMP Activity Reports. A copy of the 2003-2004 Report is included in the Appendix B.

## 2.0 SERVICE AREA INFORMATION

### 2.1 Background

The SCWD provides domestic and non-domestic water service to residential, commercial and institutional customers within the City of Dana Point and City of Laguna Beach. A small portion of San Clemente covers some 200-acres within the District. The District encompasses an area of approximately 8.3 square miles (5,300 acres) for water service along the Southern California coastline of Orange County. The general vicinity of the South Coast Water District and its boundaries are shown on **Figure No. 1**



**Figure 1**

The SCWD was formed in 1932 to serve water to the area known as South Laguna. In 1942 the District, through the newly formed Coastal Municipal Water District, started to receive water from Metropolitan Water District of Southern California (MWD).

In 1976 the District merged with the South Laguna Sanitary District, whose service area was wholly within the boundaries of the District. The District was then able to provide water distribution, sanitary collection and sanitary treatment services to its constituents.

Water recycling became part of the District's operation in 1982. The original system consisted of an Advanced Wastewater Treatment Plant (AWT) for production and a distribution system comprised of 2 reservoirs, 3 pump stations, and necessary distribution pipelines.

On January 1, 1988, the City of Laguna Beach extended its boundaries southeasterly within a portion of SCWD and annexed approximately 1,220 acres to the City. The following year the City of Dana Point was formed. A portion of this City covers some 1,800 acres northwesterly within the District. A small portion of San Clemente covers some 200-acres within South Coast Water District. The relative locations of the Cities of Laguna Beach, Dana Point, San Juan Capistrano, San Clemente and Laguna Niguel are shown on Figure No. 1. On July 1, 1997 approximately 180 acres (approximately 400 service connections) served by the District within the city limits of Laguna Niguel were detached from the District and annexed into the Moulton Niguel Water District (MNWD). This was done at the request of the residents of the affected area.

On January 1, 1999 the District, Dana Point Sanitary District, and the Capistrano Beach Water District (CBWD) which was organized as a county water district on October 11, 1948 were all consolidated to become SCWD, approximately doubling the size of the original SCWD. On July 1, 1999 the water and sanitary service of the District (that was within the city limits of the City of Laguna Beach) was detached from the District and annexed into the City of Laguna Beach. Water and sanitary facilities including approximately 2145 water service connections within this area were then contracted back to the District for operation and maintenance. For the purpose of this plan data on this area is integrated into the overall SCWD Urban Water Management Plan. Even though the facilities in this area are operated on a contractual basis, they are integral to the overall operation of the South Coast water and sanitary operations.

On April 1, 2000 a further consolidation occurred between Coastal Municipal Water District (CMWD) and Tri-Cities Municipal Water District (TCMWD). This consolidation also involved MWDOC. MWDOC (on January 1, 2001) became the administrative agency with SCWD being the contract operator of the former TCMWD system. TCMWD employees became employees of SCWD. The transmission system serving the southern most part of Orange County and a small part of northwestern San Diego County, was renamed the Joint Regional Water Supply System (JRWSS).

**2.1.1 General Location and Topography**

SCWD is situated in Orange County, approximately 60 miles south of Los Angeles and encompassing an area of approximately 5,300 acres, along the southern coastline of Orange County. The topography consists of a fertile valley and rolling hills in the southern half, with steeply sloping hills and finger like canyons in the northeast portion of the service area. Three creeks, Aliso, Salt and San Juan, bisect the district providing drainage of inland watersheds. Surface elevations range from sea level to approximately 690-feet above sea level.

## 2.2 Current and Projected Population

The SCWD service area is essentially built-out and has a current population of 41,600.

Table 2						
Population - Current and Projected						
	2005	2010	2015	2020	2025	2030
Service Area Population	41,600	42,000	42,300	42,600	42,800	43,000

### 2.2.1 Service Area and Land Use

The general character of land use within the District is mostly residential. Commercial development consists of several hotels and small businesses consistent with a community that is rapidly becoming a destination resort community. Hotels range in size from small bed and breakfast and time-shares to large four and five star luxury resorts. This emphasis on tourism does create a significant population shift during the summer tourist season. There are insignificant numbers of industrial, agricultural, or manufacturing accounts within the District. Housing, within the service area, is primarily single unit dwellings in the middle to upper price range with several gate-guarded communities. Some of these communities have converted their irrigation demands to recycled water within the common areas. The District's most densely populated area is within the central portion of the City of Dana Point that consists of multi-unit apartment and condominium dwellings. Currently the District has an estimated population of 41,600 with a maximum projected population of 43,000. It is anticipated that the District service connection currently at 12,564 will top out at 13,000.

Included within the District are two golf courses, four schools, a 170-bed hospital, 2 small shopping centers two 400 room five star hotel complexes, the Ritz Carlton and Saint Regis Resorts along with an additional 280 room five star hotel complex the Montage. With the construction of the luxury hotels, championship golf course and miles of ocean beaches, the area has become a popular destination resort with substantial population variations, especially during the summer months. The majority of the commercial development is located in the central Dana Point and Capistrano Beach areas. **Table 2** above shows permanent residential population projections for the South Coast service area:

Since the 2000 UWMP, approximately 694 new service connections have been added to the District. These were primarily in the Monarch Beach area of the District. The Treasure Island project and Pointe Monarch project have been completed. The project consists of a 275-unit resort hotel and 76 single-family residences and condominiums along with various smaller projects throughout the district. There is also a public park along the top of the bluff. At the north end of the District there is an undeveloped parcel of approximately 300 acres. This land is currently open space and it is likely to remain as such given physical and legal constraints to development. There could be some minor redevelopment on the fringe of this parcel that could include the building of up to 29 single-family residences.

Within the SCWD service area of Laguna Beach the City has informed the District that the Aliso Creek Inn and Golf Course will be redeveloped in the near future. It is estimated that this development will add 40-50 condominium units and 90-98 hotel rooms, a restaurant and spa in the place of the existing 64-room inn. The 9-hole golf course would be redesigned but will remain 9 holes. In addition there could be approximately 11-15 single family residences constructed on an adjacent parcel. It is anticipated that the permitting process through construction could take approximately 5 years.

The Dana Point Harbor is within the SCWD service area. It is a 277- acre small craft harbor owned and operated by the County of Orange. Amenities within the harbor include a 136-room three star hotel known as the Marina Inn, over 2,400 small-craft slips, as well as 75,000 square feet of existing restaurant, retail, and other commercial uses. The County is under taking a major revitalization of the harbor in the next couple of years that will result in 80,000 square feet of new restaurant and retail space and renovation of 30,000 square feet of existing restaurant and retail space.

The Dana Point Headlands property currently is undeveloped. However, it is anticipated from a water and sewer master planning basis, that this property will be developed in the very near future. For the purposes of this Water Plan, it has been assumed that some 119 residential units will be built on the property along with a 90-room resort hotel, to include restaurants and commercial space.

SCWD adopted its most recent UWMP, in accordance with Section 10610 et seq. of the California Water Code, in November, 2005<sup>1</sup>.

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<sup>1</sup>Due to the number and size of documents referenced or incorporated by reference herein, if not attached, they are available at the offices of the District. A list of documents referenced in this UWMP is attached as Appendix "A."

### 2.2.2 Climate and Rainfall

National Oceanographic and Atmospheric Administration (NOAA) does not provide historical climate data for the service area of SCWD but it does provide it for Tustin- Irvine Ranch, California (049087) which is in close proximity and very similar to SCWD Service Area as far as climate and rainfall is concerned. Therefore the data for Tustin- Irvine Ranch, California (049087) is utilized. **Table 3** below shows climate data for SCWD service area.

Table 3 Climate						
	January	February	March	April	May	June
Average Eto (Inches)	2.18	2.49	3.67	4.71	5.18	5.87
Average Rainfall (Inches)	2.53	2.73	2.21	1.01	0.26	0.07
Average Max. Temp. (°F)	67.0	68.1	69.4	72.9	75.2	79.0
Average Min. Temp. (°F)	40.5	42.4	44.3	47.7	52.2	55.8

Table 3 (continued) Climate							
	July	August	Sept.	October	Nov.	Dec.	Annual
Average Eto (Inches)	6.29	6.17	4.57	3.66	2.59	2.25	49.63
Average Rainfall (Inches)	0.01	0.08	0.27	0.36	1.32	2.25	12.82
Average Max. Temp. (°F)	84.0	85.5	84.7	79.7	73.9	68.2	75.6
Average Min. Temp. (°F)	59.2	59.5	57.0	51.9	44.4	40.7	49.6

\* Period of Record: 12/1/1927 to 6/30/2003

## 2.3 Water Supplies

The SCWD relies totally on imported water to meet its potable water needs. Imported supply is purchased from MWD through MWDOC. The District is supplied imported water from the East Orange County Feeder No.2 (EOCF No.2), and the South County Pipeline (SCP) originating from Allen-McCulloch Pipeline (AMP). The remainder of the current supply is recycled water.

### 2.3.1 Imported Water

Imported water is delivered from Northern California via the State Water Project and from the Colorado River system. The wholesale agency providing imported water to Southern California is the MWD. MWDOC is a member agency of MWD and wholesaler of imported water for the SCWD.

Imported water, treated at Diemer Filtration Plant in Yorba Linda, is conveyed to the District through the EOCF No.2 by the Aufdenkamp Transmission Main (ATM), where SCWD has a total of 8 cfs capacity and by the Joint Transmission Main (JTM) where SCWD has 6.34 cfs capacity.

The SCP was constructed by the Santa Margarita Water District (SMWD) in 1990, with participation by MWD. The pipeline originates at the AMP ST-21 turnout near the Baker Filtration Plant in Lake Forest. The District has a total capacity of 3.93 cfs in this pipeline.

**Table 4**  
**Current Supply Sources**

Source	Origin	Existing Capacity (cfs)	Existing Capacity (MGD)
Imported Supplies			
ATM	EOCF No.2	8	5,790
SCP	AMP	3.93	2,845
JTM	EOCF No.2	6.34	4,590
Imported Supply Total		18.27	13,225
Recycled Water			890
Total			14,115

### 2.3.2 Groundwater

The only groundwater source currently available to the District is in the San Juan Groundwater Basin (the Basin). The District has attempted to explore groundwater sources in the Aliso Canyon. Although the wells were somewhat productive, the TDS was excessive, even for reclamation purposes. As part of the 1999 consolidation with the CBWD, SCWD inherited ongoing plans to develop a groundwater recovery plant to tap water resources in the Basin. The

District's Groundwater Recovery Facility (GRF) is scheduled for completion in the 1<sup>st</sup> quarter of 2007. At that time, the District would be extracting approximately 1,000 acre feet of water from the San Juan Basin. This will yield approximately 800 acre feet per year. The District is in negotiations with the San Juan Basin Authority to increase the extraction to yield approximately 1,300 AF/Yr in 2015 and 2,000 AF/Yr in 2020.

### **Water Bearing Formations**

The primary water-bearing unit within the Basin is Quaternary alluvium. This alluvium ranges from a heterogeneous mixture of sand, silt, and gravel in the eastern portion of the basin, to coarse sand near the center, to fine-grained lagoonal sediments in the western portion of the basin. Thickness of the alluvium average about 65 feet and may reach more than 125 feet. Specific yield of the alluvium is estimated to average about 13 percent and range from 3 to 22 percent. Wells typically yield from 450 to 1,000 GPM. Sand layers of the Tertiary Santiago Formation may be water bearing within the region and beneath the basin, and minor amounts of water are extracted from fractured basement rock beneath the basin.

### **Restrictive Structures**

At the confluence of San Juan Creek and Canada Chiquita, near the middle portion of the basin, the Cristianitos fault forms a barrier to subsurface outflow. Forester, Mission Viejo and Aliso faults are not known to form barriers to groundwater flow, but they are mapped as crossing the basin.

### **Recharge Areas**

Recharge of the basin is from flow in San Juan Creek, Oso Creek, and Arroyo Trabuco and precipitation to the valley floor. Water from springs flows directly from Hot Spring Canyon into San Juan Creek, adding to recharge.

### **Groundwater Level Trends**

Groundwater levels in 1987 were similar to water levels in 1952. Hydrographs show seasonal cycles with average declines related to drought cycles that recover during more plentiful seasons. Groundwater flows southwest toward the Pacific Ocean.

### **Groundwater Storage Capacity**

The total storage capacity has been estimated to be 90,000 AF.

### **Groundwater Budget**

A study by NBS Lowry (1994) investigated and modeled the groundwater basin for 1979 through 1990. They determined a mean pump extraction capacity of 5,621 AF/Yr and a mean subsurface inflow of 2,246 AF/Yr. Average subsurface outflow to the ocean is estimated to be about 450 AF/Yr.

San Juan Basin Authority (SJBA) approved the San Juan Basin Groundwater Management and Facility Plan (**Basin Plan**) in 1995. (A copy of which is available in the District offices). The Basin Plan represented the first step in the implementation of the SJBA mission to develop and maintain a reliable, good quality and economical local water supply for the residents in the Basin by maximizing use of local ground and surface water, the San Juan Creek and its tributaries,

with due consideration for the preservation and enhancement of the environment, including, but not limited to, natural resources, fish and wildlife, infrastructure improvements and the cultural heritage of the area. Additional studies, such as the Preliminary Well Design and Site Selection Report, prepared in June 2001 by Geotechnical Consultants, Inc., confirm the findings in the Basin Plan.

#### Groundwater Historical and Projected Extraction

Until 2004, there was limited amount of water production from the Basin. In 2000, the California State Water Resources Control Board granted a water rights permit of 8,026 AF/Yr to SJBA for diversion and use from the Basin. The permit also allows additional 2,676 AF/Yr in the future depending on certain conditions specified in the permit. (A copy of the Permit is available in the offices of the District). The District obtained its own permit from the State Water Resources Control Board. That permit allows the District to extract 976 acre feet per year with an additional 324 acre foot per year in the future depending upon certain conditions specified in the permit. A copy of the permit is available in the offices of the District. **Table 5** shows all groundwater produced from the basin from 2000 to 2004.

Table 5 Historical Groundwater Production in San Juan Basin						
	2000	2001	2002	2003	2004	2005
AF/Yr	1396	1120	568	924	1340	2,304

**Table 6** shows projected groundwater production from the Basin by SCWD and by the City of San Juan Capistrano.

Table 6 Future Groundwater Production in San Juan Basin					
	2010	2015	2020	2025	2030
AF/Yr	6720	7220	7920	7920	7920

Table 7 shows existing and projected water supplies to meet the projected demands on the District.

Table 7 Current and Planned Water Supply Usage to meet Demands - AFY						
Water Supply Sources	2005	2010	2015	2020	2025	2030
Water purchased from:						
MWD/OG	7,408	7,262	6,762	6,196	6,306	6,306
Groundwater (San Juan Basin)		800	1,300	2,000	2,000	2,000
Recycled Water (Projected)	890	1,000	1,000	1,000	1,000	1,000
Desalination						
Total	8,298	9,062	9,062	9,196	9,306	9,306

\* Groundwater produced from San Juan Basin will be desalinated

Table 8 shows SCWD's current pumping rights from the Basin. As stated above the permit allows the District to extract 976 acre feet per year with an additional 324 acre foot per year in the future depending upon certain conditions specified in the permit. The district anticipates further increase in the permitted groundwater production.

Table 8 Groundwater Pumping Rights - AF Year	
Basin Name	Pumping Right - AF/Yr
San Juan Groundwater Basin	976
Total	976

Table 9 illustrates the amount of groundwater projected to be produced from the Basin and the percentage of projected groundwater supplies to the total water supplies.

Table 9 Amount of Groundwater projected to be pumped - AF/Yr					
Basin Name(s)	2010	2015	2020	2025	2030
San Juan Basin	800	1,300	2,000	2,000	2,000
% of Total Retail Water Supply	8.8%	14.2%	21.8%	21.5%	21.5%

## 2.4 Reliability of Supply

With the exception of relatively small quantities of recycled water and groundwater, SCWD is dependent on MWD sources for its water supply. Therefore reference is made to the MWD Regional UWMP for the reliability of MWD water supplies and its vulnerability to seasonal or climatic shortages. The District has sufficient imported water infrastructure to accommodate the increased demand.

To evaluate supply reliability, MWD developed a computer model named IRPSIM. This model uses 70 years of historical hydrology (from 1922 to 1991) to develop estimates of water surplus and shortage over the 20-year planning horizon. The output from these model runs enables staff to analyze the extent to which a particular supply option can add to the region's supply reliability and determine the need for additional supplies. It also helps to determine the appropriate targets for core and flexible supplies.

Core water supplies provide a certain amount of water in every year, regardless of whether surplus supplies already exist. Examples of core supplies include recycled water projects, safe yield groundwater production, and Colorado River Aqueduct (CRA) base supplies. They provide the advantage of greater certainty with respect to the supply yield and cost. The disadvantage of core supplies is that if they are developed solely to meet infrequent dry year supply needs, they can be redundant in surplus years, thus resulting in higher costs. Flexible water supplies provide supply only when needed (such as a dry year) and do not result in increased amounts of surplus water during years of plentiful supply. Examples of flexible supplies include voluntary water transfers and storage. Flexible supplies tend to be more cost-effective than core supplies, especially in light of the high degree of variability of Metropolitan's existing supplies, but their supply yield may be less certain. Developing a resource strategy that balances both cost and risk requires a combination of core and flexible supplies.

The IRPSIM analyses of the Integrated Resources Plan (IRP) Update report show that Metropolitan can maintain reliable supplies under the conditions that have existed in past dry periods throughout the period 2005 through 2025.

Table 10 summarizes results from IRPSIM model studies performed to test the supply reliability of the adopted resource mix. The IRPSIM results show the region's ability to respond in future years under a repeat of the 1990-92 hydrologies, that is, in the case of multiple dry years. This shows that the region can provide reliable water supplies under a series of multiple dry years.

Table 10 MAXD Multiple Dry Year Supply Capability <sup>1</sup> & Projected Demands AFY/AFY					
	2010	2015	2020	2025	2030
Current Supplies					
Colorado River <sup>2</sup>	722,000	699,000	699,000	699,000	699,000
California Aqueduct <sup>3</sup>	912,000	912,000	912,000	912,000	912,000
In-Basin Storage	482,000	480,000	463,000	449,000	449,000
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	215,000	299,000	299,000	299,000
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Transfer to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
<b>MAXD Supply Capability</b>	<b>2,619,000</b>	<b>2,834,000</b>	<b>2,841,000</b>	<b>2,827,000</b>	<b>2,827,000</b>
<b>MAXD Supply Capability w/ CRA<sup>4</sup></b>	<b>2,619,000</b>	<b>2,776,000</b>	<b>2,741,000</b>	<b>2,719,000</b>	<b>2,719,000</b>
<b>MAXD Supply Capability w/ CRA<sup>4</sup> &amp; Coachella<sup>5</sup></b>					
<b>Final Demand on MAXD<sup>6</sup></b>	<b>2,376,000</b>	<b>2,389,000</b>	<b>2,317,000</b>	<b>2,454,000</b>	<b>2,587,000</b>
<b>Potential Reserve &amp; Replenishment Supplies</b>	<b>243,000</b>	<b>377,000</b>	<b>424,000</b>	<b>265,000</b>	<b>132,000</b>

1 Represents supply capability for resource programs under listed year type.

2 Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

3 California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

4 Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and

All-American Canals lining supplies.

5 Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted

active conservation and local supplies, remaining regional targets for active conservation and local supplies,

SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

6 Includes projected firm sales plus 70% of projected IAWP agricultural sales

**Table 11** summarizes results from IRPSIM model studies performed to test the supply reliability of the adopted resource mix in a similar analysis using the historic hydrology of 1977, the **single driest** hydrologic year to date.

TABLE 11 MWD Single Dry Year Supply Capability <sup>1</sup> & Projected Demands Average					
	2010	2015	2020	2025	2030
Current Supplies					
Colorado River <sup>2</sup>	722,000	699,000	699,000	699,000	699,000
California Aqueduct <sup>3</sup>	777,000	777,000	777,000	777,000	777,000
In-Basin Storage	840,000	838,000	808,000	784,000	784,000
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	215,000	299,000	299,000	299,000
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Interbasin and Other Aqueducts	0	(35,000)	(35,000)	(35,000)	(35,000)
<b>MWD Supply Capability</b>	<b>2,842,000</b>	<b>3,101,000</b>	<b>3,102,000</b>	<b>3,078,000</b>	<b>3,078,000</b>
<b>MWD Supply Capability w/CRA<sup>4</sup></b>	<b>2,842,000</b>	<b>3,033,000</b>	<b>3,002,000</b>	<b>2,970,000</b>	<b>2,970,000</b>
<b>Maximum of 1.25 MAF<sup>5</sup></b>					
<b>Urban Demands on MWD<sup>6</sup></b>	<b>2,293,000</b>	<b>2,301,000</b>	<b>2,234,000</b>	<b>2,363,000</b>	<b>2,489,000</b>
<b>Projected Resources Replenishment Supplies</b>	<b>549,000</b>	<b>732,000</b>	<b>768,000</b>	<b>607,000</b>	<b>481,000</b>

<sup>1</sup> Represents supply capability for resource programs under listed year type.

<sup>2</sup> Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

<sup>3</sup> California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

<sup>4</sup> Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

<sup>5</sup> Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted

active conservation and local supplies, remaining regional targets for active conservation and local supplies,

SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

<sup>6</sup> Includes projected firm sales plus 70% of projected IAWP agricultural sales

**Table 12** summarizes results from IRPSIM model studies performed to test the supply reliability of the adopted resource mix in a similar analysis of expected situation on **average** over all of the historic hydrologies.

Table 12 MWD Average Year Supply Capability <sup>1</sup> & Projected Demands AFAD					
	2010	2015	2020	2025	2030
Current Supplies:					
Colorado River <sup>2</sup>	711,000	678,000	677,000	677,000	677,000
California Aqueduct <sup>3</sup>	1,772,000	1,772,000	1,772,000	1,772,000	1,772,000
In-Basin Storage	0	0	0	0	0
Supplies Under Development:					
Colorado River Aqueduct	0	0	0	0	0
California Aqueduct	185,000	185,000	185,000	185,000	185,000
In-Basin Storage	0	0	0	0	0
Intermittent Other Aqueduct	0	(35,000)	(35,000)	(35,000)	(35,000)
<b>MWD Supply Capability</b>	<b>2,668,000</b>	<b>2,600,000</b>	<b>2,654,000</b>	<b>2,654,000</b>	<b>2,654,000</b>
<b>MWD Supply Capability w/CRA<sup>4</sup></b>	<b>2,668,000</b>	<b>2,600,000</b>	<b>2,654,000</b>	<b>2,654,000</b>	<b>2,654,000</b>
<b>Maximum of IRPSIM<sup>5</sup></b>					
<b>Urban Demands on MWD<sup>6</sup></b>	<b>2,040,000</b>	<b>2,053,000</b>	<b>1,989,000</b>	<b>2,115,000</b>	<b>2,249,000</b>
<b>Potential Recovery &amp; Replenishment Supplies</b>	<b>628,000</b>	<b>547,000</b>	<b>665,000</b>	<b>539,000</b>	<b>405,000</b>

1 Represents supply capability for resource programs under listed year type.

2 Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

3 California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

4 Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

5 Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted

active conservation and local supplies, remaining regional targets for active conservation and local supplies,

SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

6 Includes projected firm sales plus 70% of projected IAWP agricultural sales

The **Table 14** illustrates the reliability of the District water supplies based on existing facilities currently in place. The supply information presented relies on the availability of imported supplies as documented above in the MWD reliability assessment and is based on the District's connected capacity to MWD/MWDOC importation system. **Therefore, it is assumed that the imported water supplies are equal to the physical ability of the District's importation system.** This does not necessarily mean that the amount of imported supply shown on the Tables will be available from MWD at all times. However, MWD as the imported supplier has the capability to provide more than the aggregate of all import demands on its system as demonstrated in **Tables 10 through 12** above. Therefore, as long as MWD has enough supplies the District has the capability to purchase up to the imported supply figures shown.

This analysis assumes MWD will be able to supply the imported demand under all hydrologic conditions as shown on **Tables 10, 11 and 12**. In a dry year, the retail demand usually increases due to dry and hot weather. In the case of the District, local supplies, that is groundwater availability may also be reduced. The greater the net difference means the more critical it is for the District to depend on imported supply to meet its demand.

In order to compare the **most critical supply years** to the **most critical demand years** different water years were selected.

For imported water **supply** reliability MWD defines its water years with different historical hydrologies. According to its draft Regional Urban Water Management Plan (May 2005), MWD defines its critical multiple-dry years as 1990-1992 and the single-dry year as 1977.

On the other hand, MWDOC has developed a water balance computer model to determine the **critical demand periods** in its service area. The model simulates the three variables that are retail demand, local supplies, and imported supplies using 83 historical hydrologies from 1922 to 2004. The average of the all 83 simulated trials is used to represent a normal condition. Of the 83 years, the hydrologic condition of 1961 yields the highest demand for imported supply, and therefore year 1961 is defined as the single-dry year in MWDOC service area. Similarly, the historical sequence of 1959 to 1961 yields the highest demand in three year sequence for imported supply, and is then defined as the multiple-dry years in MWDOC service area. Since the District service area is typical of MWDOC service area, the findings are considered applicable to the District.

Therefore, in **Table 14** all water **demands** are based on the MWDOC hydrological data. The reliability of imported **supplies** on the other hand are based upon for the single-dry year repeat of 1977 hydrology; and for multiple-dry years repeat of 1990-92 hydrology.

Table 13 shows the basis of water year utilized for demand purposes in the Table 14:

Table 13 Basis of Water Year Data			
Water Year Type			
Average Water Year	Average of Historical Hydrology from 1922 to 2004		
Single Dry Water Year	1961		
Multiple Dry Water Years	1959	1960	1961

Table 14 illustrates the reliability of SCWD water supplies.

Table 14 SCWD Supply Reliability – AF Year					
2010	Normal	Single-Dry	Multiple- Dry Water Years		
Recycled Supply Capacity	1,000	1,000	1,000	1,000	1,000
Groundwater Supply Capacity	800	800	800	800	800
Imported Water Capacity	13,225	13,225	13,225	13,225	13,225
Total Supply Capacity	15,025	15,025	15,025	15,025	15,025
Total Water Demand	9,062	9,566	9,340	9,259	9,566
Demand as % of Normal		105.5%	106.7%	103.7%	105.5%
2015	Normal	Single-Dry	Multiple- Dry Water Years		
Recycled Supply Capacity	1,000	1,000	1,000	1,000	1,000
Groundwater Supply Capacity	1,300	1,300	1,300	1,300	1,300
Imported Water Capacity	13,225	13,225	13,225	13,225	13,225
Total Supply Capacity	15,525	15,525	15,525	15,525	15,525
Total Water Demand	9,062	9,565	9,659	9,384	9,565
Demand as % of Normal		105.5%	106.7%	103.7%	105.5%
2020	Normal	Single-Dry	Multiple- Dry Water Years		
Recycled Supply Capacity	1,000	1,000	1,000	1,000	1,000
Groundwater Supply Capacity	2,000	2,000	2,000	2,000	2,000
Imported Water Capacity	13,225	13,225	13,225	13,225	13,225
Total Supply Capacity	16,225	16,225	16,225	16,225	16,225
Total Water Demand	9,196	9,706	9,755	9,509	9,706
Demand as % of Normal			106.7%	103.7%	105.5%
2025	Normal	Single-Dry	Multiple- Dry Water Years		
Recycled Supply Capacity	1,000	1,000	1,000	1,000	1,000
Groundwater Supply Capacity	2,000	2,000	2,000	2,000	2,000
Imported Water Capacity	13,225	13,225	13,225	13,225	13,225
Total Supply Capacity	16,225	16,225	16,225	16,225	16,225
Total Water Demand	9,306	9,822	9,891	9,638	9,822
Demand as % of Normal		105.5%	106.7%	103.7%	105.5%
2030	Normal	Single-Dry	Multiple- Dry Water Years		
Recycled Supply Capacity	1,000	1,000	1,000	1,000	1,000
Groundwater Supply Capacity	2,000	2,000	2,000	2,000	2,000
Imported Water Capacity	13,225	13,225	13,225	13,225	13,225
Total Supply Capacity	16,225	16,225	16,225	16,225	16,225
Total Water Demand	9,306	9,822	9,929	9,650	9,822
Demand as % of Normal		105.5%	106.7%	103.7%	105.5%

Reliability of a supply will often be impacted by climatic variation. To analyze the changes of reliability due to climate, this Plan relies, for critical demand determination, on

the established hydrologic conditions defined by climatic variation of the MWDOC region. Therefore, the average water year, the single dry water year, and the multiple dry water years in MWDOC are based on the MWDOC analysis described above and as shown on **Table 13**.

The SCWD relies on import supplies provided by MWD thorough MWDOC. Various factors that may have impact on the reliability of MWD supplies are addressed by MWD in its Regional UWMP. Through prudent planning and integrated resource implementation MWD has reduced the inconsistencies associated with supply reliability. However remote, legal, environmental, and water quality issues may have impacts on MWD supplies. It is felt however climatic factors would probably have more impact then the others mentioned.

**Table 15**  
**Factors resulting in inconsistency of supply**

Name of supply	Legal	Environmental	Water Quality	Climatic
MWD (MWDOC)	x	x	x	x
Groundwater		x	x	x

## 2.5 Transfer and Exchange Opportunities

The MWD currently has a tiered unbundled rate structure. Tier 2 of this rate structure increases the cost of supply to a member agency in order to provide a price signal that encourages development of alternative supply sources. One alternative source of supply may be a transfer or exchange of water with a different agency.

The CALFED program has helped to develop an effective market for water transactions in the Bay-Delta region. This market is demonstrated by the water purchases made by the Environmental Water Account and MWD in recent years. MWDOC and its member agencies plan to take advantage of selected transfer or exchange opportunities in the future. These opportunities can help ensure supply reliability in dry years and avoid the higher Tier 2 cost of supply from MWD. The continued development of a market for water transactions under CALFED will only increase the likelihood of MWDOC participation in this market when appropriate opportunities arise.

MWDOC is in the process of developing long-term relationships with water suppliers in Northern California. These relationships may lead to transfer agreements in the near future. One example of this is the South Feather Water and Power Agency (SFWPA). MWDOC has discussed a potential transfer of water from SFWPA through the State Water Project and MWD distribution system into the MWDOC service area. This transfer would solidify MWDOC dry-year supplies while also helping to reduce dry-year costs. Initial discussions indicate this transfer could be in the range of 10,000 acre-feet per year.

MWDOC will continue to help its member agencies in developing these opportunities and ensure their successes. In fulfilling this role, MWDOC will look to help its member agencies navigate the operational and administrative issues of wheeling water through MWD water distribution system.

SCWD relies on the efforts of MWD as well as MWDOC to pursue transfer or exchange opportunities. As such there is currently no individual effort by SCWD.

## 2.6 Water Use by Customer Type

The District currently has approximately 12,564 customer connections to its potable water distribution system. **All connections are metered.** The following Table shows the amount of actual and projected water usage by sectors on a calendar year basis from 2000 to 2025.

Water use sectors within the District include: single family residential, multi-family residential and non-residential consisting of commercial, institutional and governmental demands. The District does not provide water for agricultural use with the exception of water used by commercial nursery operations. Water demands for nursery operations are included in the non-residential sector.

Section 10631 (e) (1) of Water Code requires quantification, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a) of the same code, and projected water use, identifying the uses among water use sectors.

SCWD does not provide any sales to agriculture, other agencies, saline water intrusion barriers, groundwater recharge, or conjunctive use. The District keeps records of single family, multi-family, commercial, industrial and landscape irrigation use along with recycled water use. **Table 16** below illustrates the number of accounts for such use and the current and projected deliveries to those accounts.

Table 16 Water Use by Customer Type (AF)						
	1999-2000		2005		2010	
	metered		metered		metered	
Water Use Sectors	Number of accounts	Deliveries	Number of accounts	Deliveries	Number of accounts	Deliveries
Single Family Res.	9,466	3,938	9,774	4,041	9,950	4,160
Multi-Family Res.	1,307	1,325	1,562	1,454	1,590	1,496
Commercial/Institutional	612	1,015	497	1,397	510	1,438
Landscape Irrigation	485	895	591	1,901	600	1,956
Other	0	18	141	12	150	12
<b>Total</b>	<b>12,031</b>	<b>8,041</b>	<b>12,564</b>	<b>8,805</b>	<b>12,800</b>	<b>9,062</b>

Table 16 Water Use by Customer Type -AF (continued)						
	2015		2020		2025	
	metered		metered		metered	
Water Use Sectors	Number of accounts	Deliveries	Number of accounts	Deliveries	Number of accounts	Deliveries
Single family use	10,032	4,160	10,082	11,142	10,082	11,142
Multi-family use	1,605	1,496	1,655	1,729	1,655	1,765
Commercial/Institutional	510	1,438	510	1,438	510	1,438
Landscaping/Irrigation	608	1,956	608	1,956	608	1,956
Other	145	12	145	12	145	12
Total	12,900	9,062	13,000	9,196	13,000	9,306

Table 16 Water Use by Customer Type -AF (continued)		
	2030	
	metered	
Water Use Sectors	Number of accounts	Deliveries
Single family use	10,082	11,142
Multi-family use	1,655	1,765
Commercial/Institutional	510	1,438
Landscaping/Irrigation	608	1,956
Other	145	12
Total	13,000	9,306

### 2.6.1 System Losses

System losses occur due to leaks, hydrant flushing, un-accounted for usage and miscellaneous other losses. SCWD system losses amount to about 4 % of the total demand.

### 2.6.2 Sales to Other Agencies

SCWD does not sell potable water to other agencies. 2347 AF/YR was delivered to San Diego County Water Authority service area through the JRWSS in 2005.

**Table 17** below is the sum of water use by customer categories, sales to other agencies (which is none) and additional water uses. Totals include recycled water use as well as unaccounted for system losses. Unaccounted for system losses and recycled water use were included in **Table 17** above thereby negating the need for an additional table (that is Table 14 of the DWR Guidelines)

Table 17 Total Water Use - AF Year							
	1999/2000	2005	2010	2015	2020	2025	2030
Water Use	8,331	8,298	9,062	9,062	9,196	9,306	9,306

As mentioned earlier in Section 2.1 effective January 1, 2001 the former TCMWD transmission system was renamed the Joint Regional Water Supply System (**JRWSS**) to be operated under contract by SCWD. The system serves six water agencies in southern Orange County namely Irvine Ranch Water District, El Toro Water District, Moulton Niguel Water District, City of San Juan Capistrano, City of San Clemente and SCWD. Deliveries from JRWSS to these individual agencies are accounted for in each agency's UWMP.

There are also three retail customers in the San Diego County Water Authority (SDCWA) service area that receive service from the JRWSS but the deliveries to these retail customers are considered to be wholesale deliveries to the SDCWA.

**Table 17a** below shows past and projected deliveries from JRWSS to SDCWA

Table 17a Past and Projected Deliveries from JRWSS to SDCWA (AF/Yr)							
Year	1999/2000	2005	2010	2015	2020	2025	2030
Water Use	1,088	2,347	2,370	2,394	2,394	2,394	2,394
Customers	3	3	3	3	3	3	3

## **2.7 Demand Management Measures**

The Urban Water Management Planning Act describes two distinct methods for providing information related to Demand Management Measures (DMMs) and meeting the requirements of Water Code Section 10631 (f) and (g): (i) Members of the CUWCC may submit annual BMP Activity Reports; or (ii) water suppliers who are not members or choose not to submit annual BMP Activity Reports must submit information about their programs, including current activities, scheduled activities, methods of evaluation, savings, and costs.

As an active reporting member of the CUWCC, SCWD has included its BMP Activity Reports as Section 2.8.1 and BMP Coverage Reports as Section 2.8.2 of this Plan. The most recent annual BMP Activity Reports are included in this Plan (2003 - 2004), along with BMP Coverage Reports as a measure of implementation over time.

### **2.7.1 BMP Activity Reports (2000 through 2004)**

The California Urban Water Conservation Council Annual Best Management Practice Implementation Reports for 2003 -2004 are provided in Appendix B in this report.

### **2.7.2 BMP Coverage Report (2000 through 2004)**

The California Urban Water Conservation Council Best Management Practice Coverage Report for 2000 through 2004 are provided in Appendix B in this report

## **2.8 Evaluation of DMMs not implemented**

All DMMs are being implemented.

## 2.9 Planned Water Supply Projects and Programs

The District is involved in the discussions with the other MWDOC south county agencies in MWDOC South Orange County Water Reliability Study. This study is a comprehensive look at the water reliability in South Orange County. Several projects are being discussed and planned to meet the water reliability needs of South Orange County. These include several pipeline/pumping projects within the Irvine Ranch Water District service area to allow water to be transferred from the Orange County water basin in times of emergencies. In addition, the District is an active member of the negotiations with Santa Margarita Water District to construct a large (1,600 acre foot) storage reservoir in South Orange County. The District has requested 60 acre feet of storage in this proposed reservoir. The District is also actively involved in the discussions to locate an ocean desalination facility on property that the District owns adjacent to San Juan Creek. This proposed facility size is recommended for 25 MGD.

### SCWD Capistrano Beach Desalter

SCWD is currently constructing a groundwater recovery facility that should be operational by the 1<sup>st</sup> quarter of 2007. The plant initially will be built for 1,300 AFY; however, the current State Water Resources Control Board permit allows for 976 AFY until additional availability in the basin is shown. The plant is being built for future expansion by additional reverse osmosis trains. The cost of the plant is \$5.5 millions not including offsite facilities. South Coast Water District may be allowed to expand beyond the current state permit once the performance of the basin is established.

Table 18

#### Future Water Supply Projects – AF

Project Name	Start Date	Completion Date	2006-2010				
			Normal Yr	Single dry	Multiple Dry Year	Multiple Dry Year	Multiple Dry Year
Groundwater Desalter	2005	2007	800	800	800	800	800

Table 18 (Continued)

#### Future Water Supply Projects – AF

Project Name	Start Date	Completion Date	2010-2015				
			Normal Yr	Single dry	Multiple Dry Year	Multiple Dry Year	Multiple Dry Year
Groundwater Desalter	2005	2007	1,300	1,300	1,300	1,300	1,300

Table 18 (Continued)							
Future Water Supply Projects – AF							
Project Name	Start Date	Completion Date	2010-2030				
			Normal Mgd	Shut-Down	Multiple Dwy/Year	Multiple Dwy/Year	Multiple Dwy/Year
Groundwater Desalter	2005	2007	2,000	2,000	2,000	2,000	2,000

## 2.10 Development of Desalinated Water

Until recently, seawater desalination has been considered uneconomical to be included in the water supply mix. However, recent breakthroughs in membrane technology and plant siting strategies have helped reduce desalination costs, warranting consideration among alternative resource options. However, the implementation of large-scale seawater desalination plants faces considerable challenges. These challenges include high capital and operation costs for power and membrane replacement, availability of funding measures and grants, addressing environmental issues and addressing the requirements of permitting organizations, such as the Coastal Commission. These issues require additional research and investigation.

MWDOC has been in the process of studying the feasibility of ocean desalination on behalf of its member agencies. MWDOC is reviewing and assessing treatment technologies, pretreatment alternatives, and brine disposal issues, and identifying and evaluating resource issues such as permitting, and the regulatory approvals (including CEQA) associated with the delivery of desalinated seawater to regional and local distribution system.

MWDOC is also assisting its member agencies in joint development of legislative strategies to seek funding in the form of grant and/or loans, and to inform decision-makers of the role of seawater desalination in the region's future water supplies. Observing the strategies and outcomes of other agency programs (such as that in Tampa Bay, Florida) to gain insights into seawater desalination implementation and cost issues is also being undertaken.

Table 19	
Opportunities for desalinated water	
Source of Water	Check/Type
Ocean Water	x
Brackish ocean water	x
Brackish groundwater	x

In Orange County, there are three proposed ocean desalination projects that could serve MWDOC and its member agencies with additional water supply. These are the Poseidon Resources proposed Huntington Beach Seawater Desalination Project, the joint SDCWA and MWDOC proposed Regional San Onofre Seawater Desalination Project, and the MWDOC proposed Dana Point Ocean Desalination Project.

***Poseidon Resources Corporation Proposed Project.*** The Poseidon Resources proposed Seawater Desalination Project would be co-located within the AES Generation Power Plant in Huntington Beach. It is being planned to provide 50 MGD of desalinated supply for distribution into coastal and south Orange County. Currently, the project remains in the environmental review and permitting phase. At this time, there are no current agreements with water agencies in Orange County for purchase of the product water.

***Joint San Diego/Orange County Proposed Regional San Onofre Project.*** The joint San Diego County Water Authority (SDCWA) and MWDOC proposed Regional San Onofre Seawater Desalination Project is currently being investigated to determine project feasibility. The project size is yet to be determined, but a large facility is being investigated (50 to 150 MGD). This project's time frame has been estimated by SDCWA for implementation in 2020.

***MWDOC Proposed Dana Point Ocean Desalination Project.*** MWDOC is currently investigating the feasibility of an ocean desalination plant in Dana Point, in the vicinity of San Juan Creek. This project would provide both system reliability as well as providing supply reliability to the area and MWDOC service area. MWDOC commissioned a preliminary feasibility study of the project in 2000. That study suggested that the site appeared feasible for a desalination project and up to a 25 MGD project was recommended for this location.

Therefore **Table 18** above shows opportunities for desalinated water on a regional basis (MWDOC service area) and not for the District specifically.

## **2.11 Current and Projected Supply Includes Wholesale Water**

Water Code section 10631 (k) requires urban water suppliers that rely upon a wholesale agency for a source of water, to provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. SCWD therefore has provided MWDOC, its wholesale provider, projections of future water demands. The wholesale agency, MWDOC has provided information to MWD for inclusion in the MWD plan. MWD has identified and quantified the existing and planned sources of water for its total service area. MWD has declared that it is more than capable of supplying normal, single dry-year and multi-dry year demands of all its member agencies for the next 25 years. However, due to its unique circumstances, neither MWD, nor MWDOC will identify water available to each urban water supplier in case of a shortage situation. According Government Code Section 350, in case of a shortage MWD and MWDOC will deliver water based on the need. (Please see Section 4.1 for more detailed discussion.

SCWD regularly provides projection of future water demand to MWDOC. The demand figures in the following **Table 19** were provided to MWDOC in preparation of the District's as well as MWDOC' UWMP.

Table 20 SCWD Demand Projections Provided to Wholesale Suppliers - AFY					
Wholesaler	2010	2015	2020	2025	2030
MWDOC	7,675	7,263	6,762	6,196	6,306

MWDOC in preparation of its UWMP has identified the water demands associated with SCWD and communicated those demands to MWD, its supplier as shown on **Table 21** below.

Table 21 Wholesaler Identified & Quantified Existing and Planned Sources of Water- AFY					
Wholesaler sources	2010	2015	2020	2025	2030
MWDOC	7,675	7,263	6,762	6,196	6,306

In the situation where the reliability of imported supply is not specifically quantified, MWDOC uses the inferred approach again and assumes MWD will be able to supply the imported demand under all hydrologic conditions. As a result, the water year is defined by the net difference of total retail demand less local supplies. In a dry year, the retail demand usually increases due to dry and hot weather. At the same time, local supply (run-off) usually is low due to less precipitation. The greater the net difference means more critical it is for MWDOC to depend on imported supply to meet its demand.

In order to compare the **most critical supply years** to the **most critical demand years** different water years were selected.

For imported water **supply** reliability MWD defines its water years with different historical hydrologies. According to its draft Regional Urban Water Management Plan (May 2005), MWD defines its critical multiple-dry years as 1990-1992 and the single-dry year as 1977.

On the other hand, MWDOC has developed a water balance computer model to determine the **critical demand periods** in its service area. The model simulates the three variables, which are retail demand, local supplies, and imported supplies using 83 historical hydrologies from 1922 to 2004. The average of the all 83 simulated trials is used to represent a normal condition. Of the 83 years, the hydrologic condition of 1961 yields the highest demand for imported supply, and therefore the year 1961 is defined as the single-dry year in MWDOC service area. Similarly, the historical sequence of 1959 to 1961 yields the highest demand in three year sequence for imported supply, and is then defined as the multiple-dry years in MWDOC service area. Since